

UNIVERSITY OF TECHNOLOGY SYDNEY

**Inside the Creative Leap:
Understanding Metaphorical Thinking in Design**

By
Suat Hoon Pee

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CERTIFICATE OF ORIGINAL AUTHORSHIP

I, Pee Suat Hoon declare that this thesis is submitted in fulfilment of the requirements for the award of the degree of Doctor of Philosophy, in the Faculty of Design, Architecture and Building at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Suat Hoon Pee

Date: 13 Nov 2018

To God be the glory!

*The Lord is my strength and my shield; in him my heart trusts,
and I am helped; my heart exults and with my song I give thanks to him. Psalm 28:7*

*“but they who wait for the Lord shall renew their strength;
they shall mount up with wings like eagles; they shall run and not be weary;
they shall walk and not faint.”*

Isaiah 40:31

*“...He gives wisdom to the wise and knowledge
to those who have understanding...” Daniel 2:21*

Abstract

In order to understand design and design thinking, it is necessary to understand what lies at the *core of what designers do* in their creative practice. Literature reveals that the creative leap is recognised as an important aspect of design thinking (Archer 1965; Cross 2006), the kernel of design (Roozenburg 1993), and even the *real crux of the act of designing* (Archer 1965). This study is motivated by the need to gain insight into the creative leap, and to provide at least a partial answer to the question of where originality in design comes from.

Many researchers talk about the leap as the heart of abductive thinking (Taylor, Torugsa & Arundel 2017). Therefore, an improved understanding of abductive thinking could illuminate the steps underlying the creative leap. In design thinking, the creation of frames is powered by abductive thinking (Dorst 2011). As metaphors are used as frames in design practice, a focus on the use of metaphors in framing could shed valuable light on how the creative leap is carried out in design thinking. However, metaphor creation is a topic that is not well researched, according to Cila (2013). Therefore, it needs to be strengthened with empirical research.

The guiding question that directs this project is: “What are the creative processes present in metaphor creation?” The research questions developed in this study are:

Research Question 1: “*Which types of creation processes of metaphors that help produce frames can be identified?*” and

Research Question 2: “*How can the logical representations of these respective creation processes identified in RQ1 be described?*”

From literature investigation, it is found that there are various types of metaphors in existence and they are likely to be created in different ways. Since a *general* understanding of the creation process will not reveal how different metaphors are created, a *typology* approach is needed.

Three studies are conducted in this research project to answer the research questions. The findings reveal two types of creation processes: *Explicit Thinking Type (ET)* and *Perceptual Intuition Type (PI)*. In the creation of ET metaphors, designers use propositional symbols and logical inferences such as categorisation. For creating PI metaphors, designers make use of the gestalts of the design situations to trigger the metaphorical sources.

Findings from the single case analysis reveal that PI metaphors are often intuitively created. In order to gain an improved understanding of this process, the knowledge of image schema is applied in the analysis to illuminate how PI metaphors and the mysterious leap are conducted. This close description of the use of *image schemas* contributes significant insights into how originality is achieved in creative practice.

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